HAWAI'I JOURNAL WATCH

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Highlights of recent research from the University of Hawai'i and the Hawai'i State Department of Health

Foster Care Experiences and HIV-Risk Behaviors

Children and teens who have experienced homelessness and have also spent time in foster care may face heightened risk of engaging in HIV-risk behaviors. Lead author Amanda Yoshioka-Maxwell PhD, of the Myron B. Thompson School of Social Work, collected data from 184 youth at drop-in centers in Los Angeles to investigate the specific aspects of foster care that may impact HIV-risk behaviors. Results showed that long periods spent in care negatively impacts condom use. In addition, older age of exit from foster care appears to protect against engagement in injection drug use. Keeping foster youth from homelessness reduces risk, and foster youth need more education in condom use, the researchers concluded. The study, Exploring the Relationship Between Foster Care Experiences and HIV Risk Behaviors Among a Sample of Homeless Former Foster Youth, is published in *AIDS and Behavior*.

Improving Tests for Zika Virus

Accurate diagnosis of Zika virus infection requires blood tests that look for antibodies to the virus. However, these tests can potentially give a false-positive result if a person has previously been infected with dengue virus because the viruses are closely related. New research led by Wen-Yang Tsai, MS, of the John A. Burns School of Medicine, shows that washing the antibodies taken from patient blood samples with urea prior to testing them can distinguish between a Zika infection in a person who was previously infected with dengue and a second infection of dengue, with a sensitivity of 87.5% and a specificity 93.8%. This testing technique could be used to help diagnose Zika infections in dengue-endemic regions, the researchers wrote. The article, Use of Urea Wash ELISA to Distinguish Zika and Dengue Virus Infections, was published in *Emerging Infectious Diseases*.

A Tuberculosis-Free World Is Possible

The world could be free of tuberculosis (TB) by 2045 if world leaders invested sufficient resources today in treating and preventing the disease, according to a new report from experts including Victoria Fan, ScD, with UH Public Health. The new economic analysis showed that fighting TB offers a strong return on investment: For every dollar spent in the US on TB research and development, $16–$82 are returned to the US economy. TB currently kills 1.6 million people yearly worldwide and reducing deaths by 90% would require a global investment of about $5 billion a year initially. Preventing one TB death will result in savings at least three times that of the costs, the researchers found. Key strategies will include targeting drug-resistant TB and ensuring high-risk groups are identified and reached with medical care. The paper, Building a Tuberculosis-Free World: The Lancet Commission on Tuberculosis, is published in *Lancet*.

Liver Cancer Study Links Gene Signatures to PET Imaging Results

The heterogeneity of hepatocellular carcinoma (HCC) makes it difficult to study possible molecular therapeutic targets in clinical trials. Now, a new study links certain gene signatures of HCC with the rates of uptake of a marker called fluorine-18 fluorocholine (FCh) measured by PET scans. Sandi Kwee, MD, PhD, of the UH Cancer Center and colleagues compared validated gene signatures with the results of PET imaging using FCh in 41 patients in Hawai'i. The researchers found an association between high FCh uptake and multiple previously published gene signatures for HCC, including those associated with survival. They also found another signature linked with low FCh uptake and shorter survival. Few studies to date have reconciled molecular imaging with genomics in this manner. It is an under-utilized approach to studying tumor pathobiology, the researchers wrote. The article, Transcriptomics Associates Molecular Features with 18F-Fluorocholine PET/CT Imaging Phenotype and Its Potential Relationship to Survival in Hepatocellular Carcinoma, was published in *Cancer Research*.

A New Target for Treating *Clostridium difficile* Infections

Patients who develop gut infections with the bacteria *Clostridium difficile* (commonly called *C. diff*) are commonly treated with the broad-spectrum antibiotics, but these medications can cause further disruption of the gut flora. In a new paper, researchers including Dianqing Sun, PhD, with The Daniel K. Inouye College of Pharmacy, found that the enzyme FabK is essential for fatty acid synthesis in *C. diff*. The researchers used gene silencing and chemical inhibition of the enzyme to show that FabK is critical for both survival and spore production. Moreover, other major gut bacteria species do not depend solely on FabK for fatty acid synthesis, suggesting that FabK represents a target for new narrow-spectrum antibiotics to treat *C. diff* with less damage to other gut microbiota. The paper, The Fatty Acid Synthesis Protein Enoyl-ACP Reductase II (FabK) Is a Target for Narrow-Spectrum Antibacterials for *Clostridium difficile* Infection, is published in *ACS Infectious Diseases*.

Early Kidney Disease in Asian-Americans

Asian-Americans may face higher risk of early kidney damage compared to Whites. Researchers led by Merle Kataoka-Yahiro, DrPH, of the UH School of Nursing and Dental Hygiene, and James Davis, of the John A. Burns School of Medicine looked at data gathered from nearly 6,000 participants in the National Health and Nutrition Examination Survey 2011-2014. They found Asian-Americans were significantly more likely to have elevated urine albumin-to-creatinine ratios (ACR), compared to Whites, suggesting that Asian-Americans are at higher risk of early kidney damage. After adjustments were made for age, sex, education, and comorbidities, Asian-Americans were 2.77 times more likely than Whites to have ACR levels above 300 mg/g, indicating early-stage kidney damage. However, Asian-Americans were significantly less likely to have estimated glomerular filtration rates of less than 60 ml/min/1.73m^2, a marker of kidney dysfunction. More research on the relationships between ethnicity, diet, genetics, and environment is needed, the researchers wrote. The paper, Asian Americans & Chronic Kidney Disease in a Nationally Representative Cohort, is published in *BMC Nephrology*.